

WEIL-McLAIN



HE II

Boiler Manual Gas-Fired, Induced Draft



Includes:

- Installation
- Start-up
- Service
- Parts

**Refer to Control Supplement
for additional information**

BOILER MANUAL FOR USE BY A CERTIFIED HEATING SPECIALIST

- To the owner: Regular service on this boiler is recommended and should be performed by a certified heating specialist.
- To the installer: Read all instructions and warranty before starting.
Refer to vent section before locating exhaust.

Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

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IMPORTANT: When calling or writing about the boiler, PLEASE GIVE THE MODEL, and SERIES located on the boiler rating label, AND C.P. NUMBER affixed next to rating label.

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WARNING

Do not use petroleum-based cleaning or sealing compounds in boiler system.
Severe damage to the boiler will occur.

The following defined terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning the life of the product.

DANGER

indicates presence of a hazard which *will* cause *severe* personal injury, death or substantial property damage if ignored.

CAUTION

indicates presence of a hazard which *will* or *can* cause minor personal injury or property damage if ignored.

WARNING

indicates presence of a hazard which *can* cause *severe* personal injury, death or substantial property damage if ignored.

NOTICE

indicates special instructions on installations, operation, or maintenance which are important but not related to personal injury hazards.

WARNING

FAILURE TO FOLLOW ALL INSTRUCTIONS IN PROPER ORDER CAN CAUSE PERSONAL INJURY OR DEATH. READ ALL INSTRUCTIONS BEFORE INSTALLING.

Section I: Pre-Installation

CODES

Installation must comply with all local codes, laws, regulations and ordinances, also United States National Fuel Gas Code ANSI Z223.1-latest edition. When required, installations must conform to Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1. Safe lighting and other performance criteria were met with the gas manifold and control assembly provided on boiler when boiler underwent tests specified in ANSI Z21.13-latest edition.

In Canada only, installation must comply with CAN/CGA B149.1 or .2 Installation Code.

VENTING

Give special attention to location of vent to avoid possibility of severe personal injury, death, or substantial property damage.

1. Gases will form a white plume in winter.
2. Prevailing winds could cause freezing of condensate and water/ice build-up on building, plants or roof.
3. Winds in excess of 45 mph can cause nuisance boiler shut-down when boiler is sidewall vented.
4. Plume could obstruct favorite window view.
5. Locate or guard the vent to prevent accidental contact by people or pets.
6. Vent must terminate at least 4 feet below, 4 feet horizontally from any door, window or gravity air inlet to the building. This vent must not be less than 7 feet above grade when located adjacent to public walkways.
7. DO NOT terminate vent into window well, stairwell, alcove, courtyard or other recessed area.
8. Do not terminate vent above any door, window or gravity air inlet. Condensate can freeze causing ice formations.
9. Terminate at least 6 feet from adjacent walls.
10. Terminate vent at least 1 foot above grade, including normal snowline.

COMBUSTION AIR AND VENTILATION OPENINGS

WARNING

Adequate combustion air and ventilation openings must be provided to assure proper combustion and prevent the possibility of flue gas spillage.

Boiler installation must assure sufficient openings in building and boiler room to provide adequate combustion air and ventilation. Consider construction tightness of building when deciding whether additional outside openings may be needed.

Older buildings with single-pane windows, minimal weather-stripping and no vapor barrier often provide enough natural infiltration and ventilation without dedicated openings.

New construction or remodeled buildings are most often built tighter. Windows and doors are weatherstripped, vapor barriers are used and openings in walls are caulked. As a result, such tight construction is unlikely to allow proper natural air infiltration and ventilation.

Air from inside building (boiler in interior room):

- Tightly constructed buildings must be provided with openings to outside for combustion and ventilation air. These openings must be sized to handle all fuel burning appliances, exhaust and ventilation fans and fireplaces.
- When openings to boiler room are taken to interior spaces, provide two permanent openings: a combustion air opening within 12 inches of floor and a ventilation opening within 12 inches of ceiling. Each opening must provide a minimum free area of one square inch per 1,000 Btuh input of all appliances in room plus requirements for any exhaust fans in room. The interior space supplying combustion and ventilation air must have adequate infiltration from outside.

Air directly from outside to boiler room:

- Tightly constructed buildings must be provided with combustion air and ventilation openings to boiler room which are adequate to handle the boiler needs plus the needs of all other fuel-burning appliances, fireplaces and exhaust or ventilation fans.
- Combustion and ventilation openings connecting directly or by ducting to outside, or to attic or crawl spaces that freely connect with outside, must be sized as follows:
 1. Outside wall or vertical ducting—one square inch per 4,000 Btuh input of all appliances in room plus requirements for any exhaust fans or other appliances in room.
 2. Horizontal ducting—one square inch per 2,000 Btuh of all appliances in room plus requirements for any exhaust fans or other appliances in room.
 3. All ducting must be same size as permanent openings. Minimum area dimensions of ducting must be no less than 9 square inches.
 4. Other size ducting must comply with local codes.



MINIMUM SERVICE CLEARANCES

Suggested for easy servicing:

- 24 inches for cleaning and servicing, left side.
- 18 inches for access to controls and components, front.
- 36 inches from top for cleaning flueways.
- 6 inches on remaining sides.

Screwdriver clearance for removal of jacket screws should be provided. If not, unions and shut-off valves should be installed in system so boiler can be moved for servicing.

MINIMUM CLEARANCE FOR CLOSET INSTALLATIONS

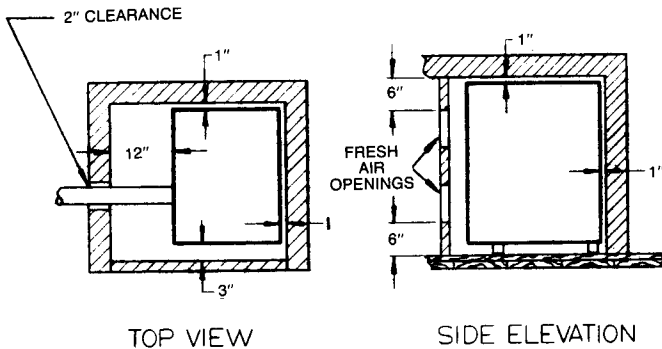


FIGURE 1

RESIDENTIAL GARAGE INSTALLATION (ANSI Z223.1)

Install boiler so burners are at least 18 inches above the floor.

FOUNDATION

HE II boilers are approved for use on combustible flooring but **MUST NOT BE INSTALLED ON CARPETING.**

1. Level concrete or solid brick pad foundation is required if:
 - a) Water could flood area.
 - b) Non-level conditions exist.

MINIMUM BOILER FOUNDATION SIZES	
Number of Boiler Sections	Foundation Width "W"
3	12"
4	15"
5	18"
6	21"

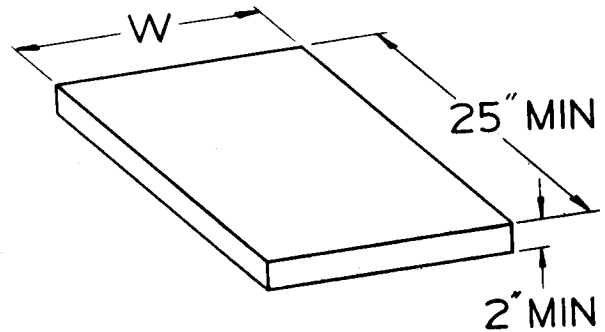


FIGURE 2

Section II: Boiler Set-up

PLACING THE BOILER

Leave boiler in crate and on pallet until installation site is ready. Boiler must be installed so that gas control system components are protected from dripping or spraying water or rain during operation or service.

1. Move entire crate and pallet next to selected location.
2. Remove crate.
3. Remove boiler from pallet as follows:
 - a. Tilt left side of boiler up and place a board under left legs.
 - b. Tilt boiler the other way and place a board under right legs.
 - c. Slide boiler backward off pallet and into position.

DO NOT DROP BOILER OR BUMP JACKET ON FLOOR OR PALLET.

4. Check level. Shim legs, if needed. Do not alter the legs.

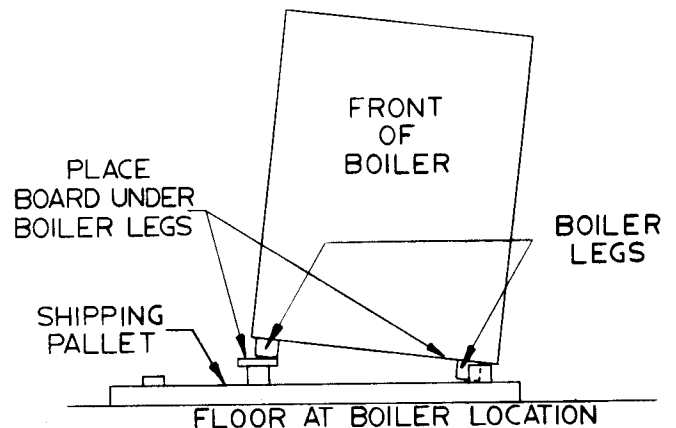
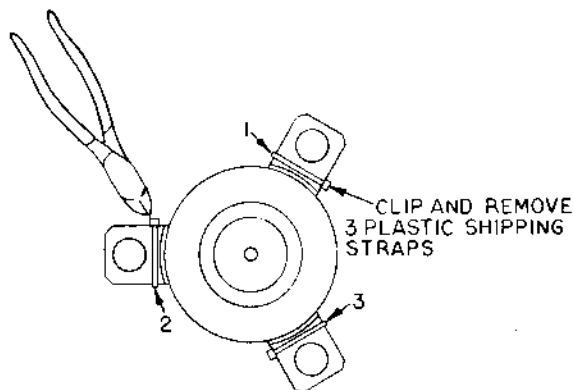


FIGURE 3

5. Remove blower shipping plastic straps.



**SHIPPING STRAP REMOVAL
FIGURE 4**

6. Check for proper orifice sizing from chart below.
7. Check burner tubes for placement in their slots at the back with openings up. Make sure gas orifices inject down center of burner tubes.
8. Replace burner access panel and jacket door.

Type of Gas	ORIFICE SIZES	
	Heating Value, BTU/cu. ft.	Marked Orifice Size
Natural	1000	#47 (Std. Drill No.)
Propane	2500	.048

CAUTION

Access panel must be secured in position during boiler operation to prevent momentary flame roll-out on ignition of main flame, which can melt the roll-out thermal fuse element.

DANGER

Never jumper roll-out thermal fuse element or a hazardous condition will exist.

HYDROSTATIC PRESSURE TEST

Pressure test before attaching piping or electrical supply.

WARNING

Leaks must be repaired at once or damage to the boiler can result. Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to the boiler will occur.

1. Remove shipping nipple from supply outlet. Plug tappings, including compression tank tapping.
2. Connect water supply. Fill boiler and purge all air. TEST AT 45 PSIG for more than 10 minutes.

WARNING

Do not leave the boiler unattended. A cold water fill could expand and cause excessive pressure, which can result in severe personal injury or substantial property damage.

3. Make sure gauge pressure has been maintained.
4. Check for leaks. Repair, if found.
5. Drain boiler and remove testing plugs.
6. On initial start-up, check for leaks in system piping. If found, repair at once.

Section III: Piping

CAUTION

Failure to properly pipe boiler may result in improper operation and damage to boiler or building.

RECOMMENDED BOILER AND SYSTEM PIPING FOR SINGLE ZONE (OR MULTIPLE ZONES WITH ZONE VALVES)

1. Pipe as shown in Figures 5 or 6.
2. Use low water cut-off when:
 - a. boiler is located above radiation level.
 - b. required by certain state, local, or territorial codes or insurance companies.

Use low water cut-off designed for water installations. Electrode probe type is recommended. Install in tee in supply piping.

3. If the system is to comply with ASME codes, an additional high temperature limit is needed. Purchase and install in supply piping from the boiler.

4.

WARNING

Relief valve discharge piping must be piped near floor close to floor drain to eliminate potential of severe burns. Do not pipe to any area where freezing could occur.

5. Expansion tank and air vent:

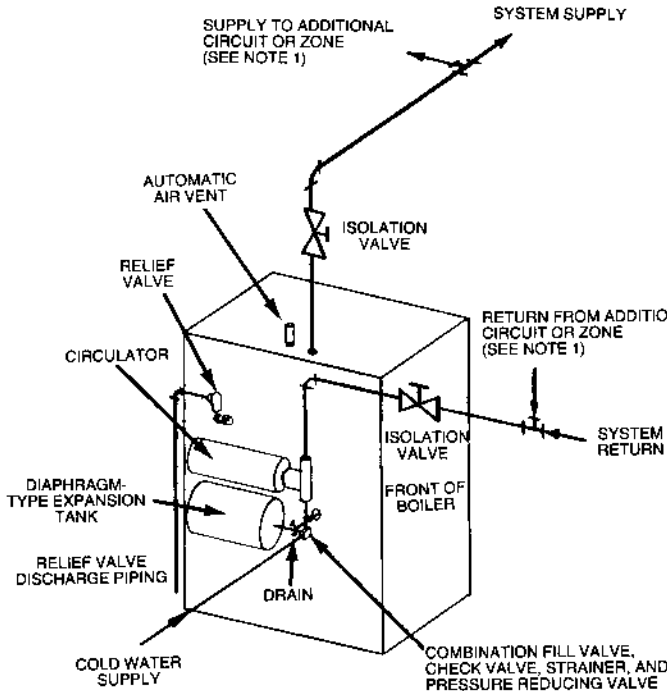
- a. Diaphragm-type expansion tank: Ensure tank pressure and size will handle system fill and water volume.
 - 1) Fill pressure may be adjusted at tank for design conditions. Follow manufacturer's instructions.
 - 2) Additional tanks may be connected to tees in system near boiler. See Table 1.
 - 3) Install automatic air vent as shown in Figure 5.
- b. Closed-type expansion tank: Size tank to system requirements. Refer to tank manufacturer's instructions.
 - 1) Connect from 1/2" tapping (located behind supply outlet) to expansion tank. Use 1/2" NPT piping. Any horizontal piping must pitch up towards tank 1" per 5 feet of piping.
 - 2) Built-in air elimination system is provided. No additional device is needed if tank is piped as shown in Figure 6.

6. Connect supply, return, and cold water fill piping as shown in Figures 5 or 6.

TABLE I—EXPANSION TANK SIZING*

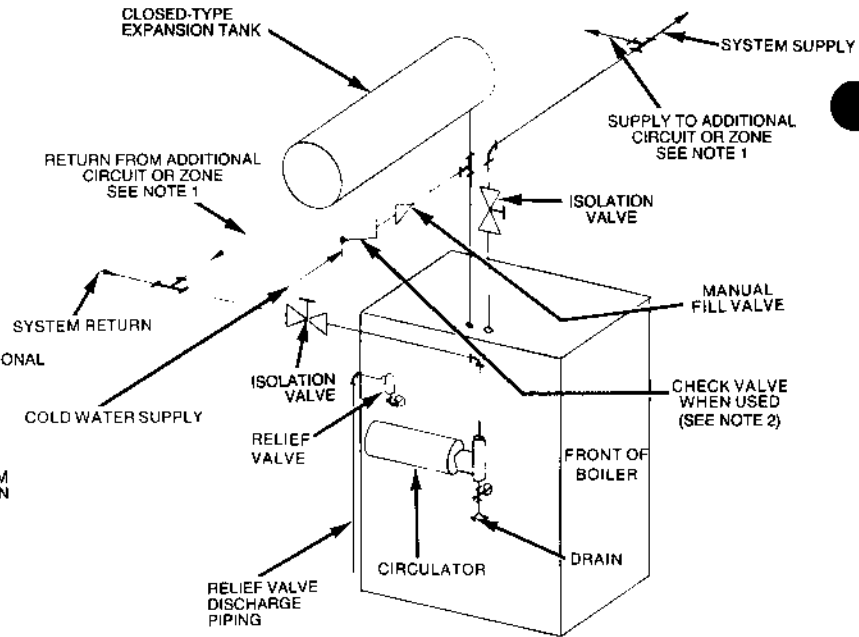
Number of Boiler Sections	Fill-Trol Tank—Adequate for Series Loop Piping Systems with Convactor Baseboard	Additional Ex-Trol Tank Required for One Pipe Systems with Convactor Baseboard	** Additional Ex-Trol Tank(s) Required for Cast-Iron Radiators	Additional Ex-Trol Tank(s) Required for Cast-Iron Baseboard
3	No. 109	—	No. 15	No. 15
4	No. 109	No. 15	No. 15	No. 30
5	No. 109	No. 15	No. 15	No. 30
6	No. 110	—	No. 15	No. 30

* Tank selections based on 220°F. average system water temperature.
 ** Systems with unusually large volumes of water may require additional expansion capacity.



NOTES:
 1. Use balancing valves or zone valves in each circuit for multiple circuit applications.

PIPING WITH DIAPHRAGM-TYPE EXPANSION TANK
 FIGURE 5

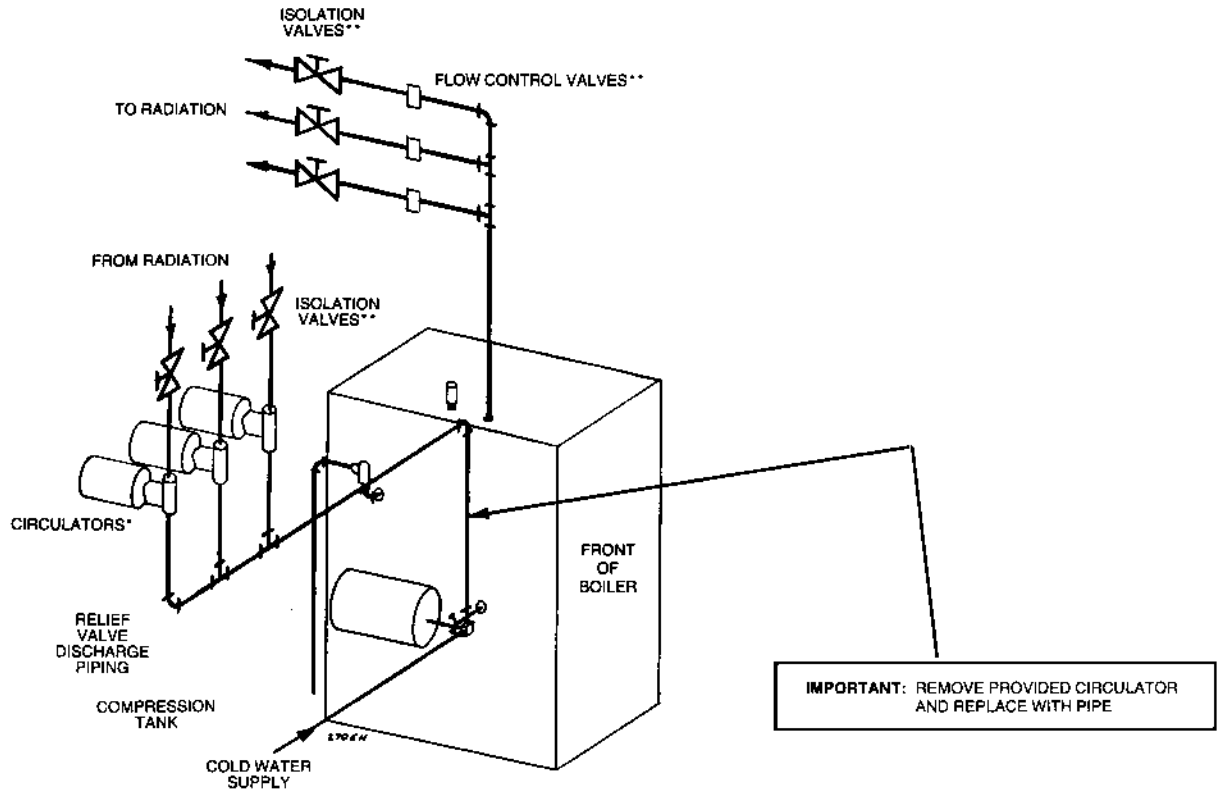


NOTES:
 1. Use balancing valves or zone valves in each circuit for multiple circuit applications.
 2. Use backflow check valve where required by local codes.

PIPING WITH CLOSED-TYPE EXPANSION TANK
 FIGURE 6

MULTIPLE ZONING WITH CIRCULATORS

1. If multiple zoning with circulators, boiler must be repiped. See Figure 7.
 - a) Remove provided circulator.
 - b) Replace circulator with pipe.
 - c) Determine if by-pass piping will be needed. See page 8.
 - d) Mount circulators as shown.
 - e) Install flow control valves.
 - f) Follow remaining piping instructions.



*DO NOT USE DRAIN COCK TAPPING
 **MAY BE INSTALLED IN ALTERNATE LOCATIONS

TYPICAL HE
 MULTICIRCULATOR-ZONING
 FIGURE 7

BYPASS PIPING

BYPASS PIPING IS NOT NORMALLY REQUIRED ON ANY BASEBOARD SYSTEM.

Bypass piping should be used for the following installations. Bypass, supply, and return piping should be same size.

1. To protect system radiant panels, plaster, etc. from high temperature water supplied from boiler, see Figure 8.

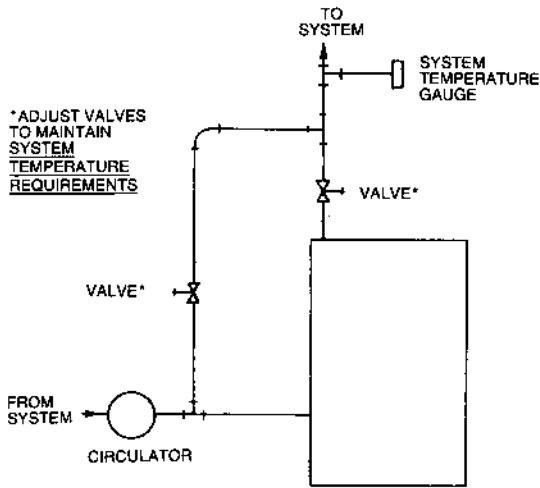


FIGURE 8

2. To protect boiler from condensation formed by low water temperature returned from large water content converted gravity systems, etc., see Figure 9.

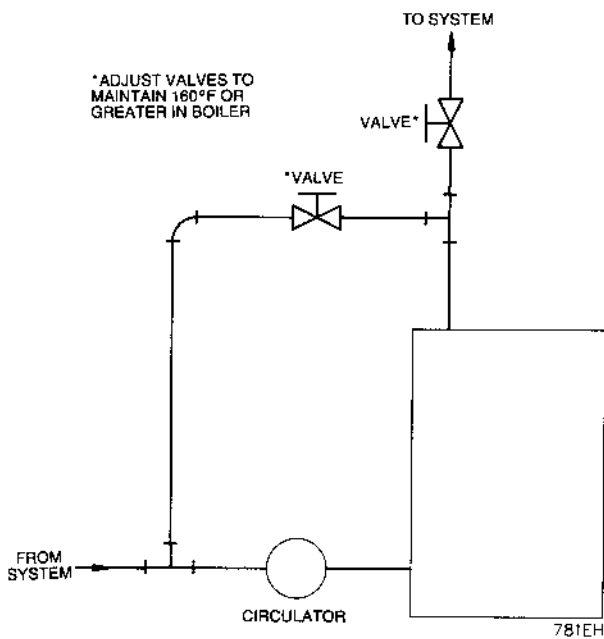


FIGURE 9

3. To protect boiler from condensation while protecting system from high water temperatures, as in large water content radiant ceiling panels, see Figure 10.

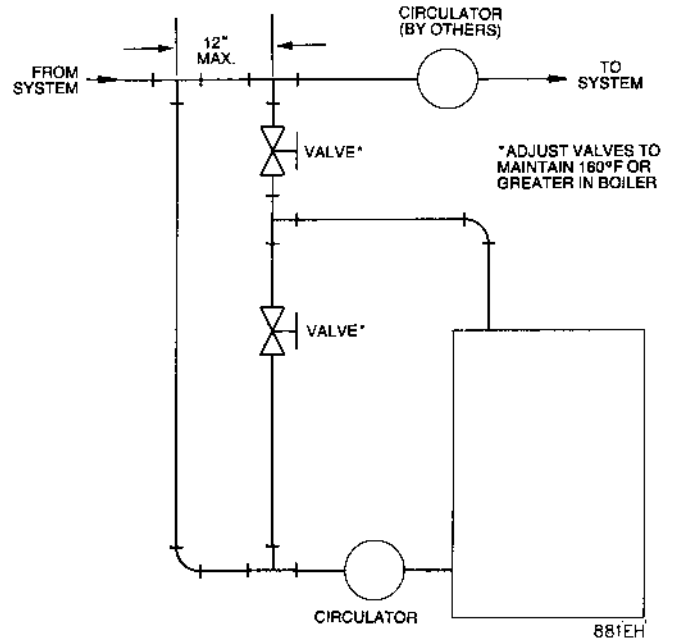
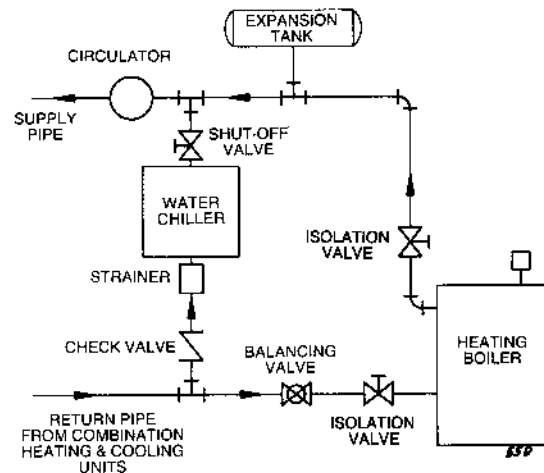


FIGURE 10

USE WITH REFRIGERATION SYSTEM

The boiler must be installed so that chilled medium is piped in parallel with the heating boiler with appropriate valves to prevent the chilled medium from entering the boiler. Consult I=B=R Installation and Piping Guides.



RECOMMENDED PIPING FOR COMBINATION HEATING & COOLING (REFRIGERATION) SYSTEMS
FIGURE 11

Section IV: Venting

Determine venting method to use. Refer to following sections for installation details.

CHIMNEY DRAFT VENTING—natural draft
DIRECT EXHAUST—for 3" vent pipe

VERIFYING VENTING SYSTEM OPERATION

At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

- a. Seal any unused openings in the common venting system.
- b. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion, and other deficiencies which could cause an unsafe condition.
- c. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliances not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
- d. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
- e. Test for spillage at draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match, or candle, or smoke from a cigarette, cigar or pipe.
- f. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliance to their previous conditions of use.

Any improper operation of common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1—latest edition. Correct by resizing to approach the minimum size as determined using the appropriate tables in Appendix G of that code.

CHIMNEY DRAFT VENTING

To prevent downdrafts, chimney should extend at least 2 feet above highest part of roof or other structure within 30 feet.

Minimum chimney size listed on back cover of manual. To vent with another appliance, see National Fuel Gas Code, ANSI Z223.1 Appendix G for sizing.

DANGER

Inspect existing chimney before installing boiler. Failure to clean or replace perforated pipe or tile lining will cause severe injury or death.

Breeching must not be connected to any portion of a mechanical draft system that can operate under positive pressure.

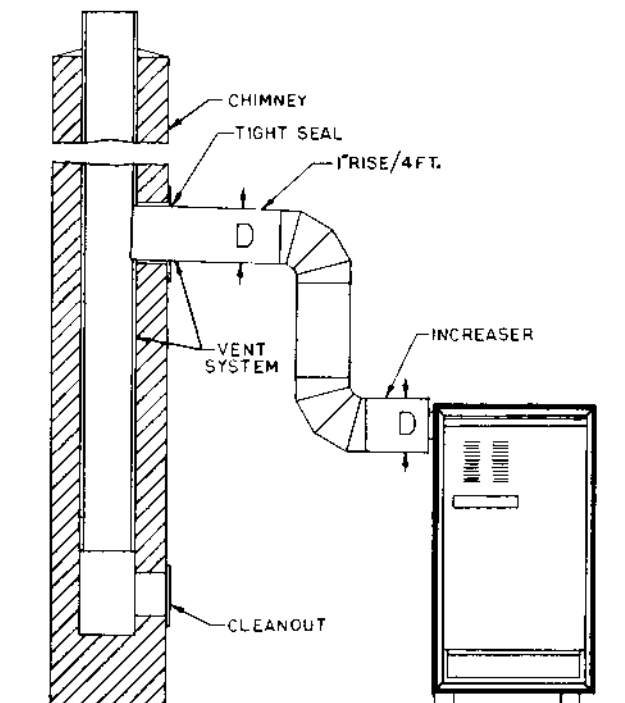
A. INSIDE CHIMNEY

Must be lined—vitreous tile lining recommended. See Figure 12 and Table 2.

1. Maintain two-inch clearance from combustible material to vent pipe.
2. Do not use chimney with open fireplace.
3. Inspect chimney and clean if needed.
4. Make horizontal runs as short as possible. Long runs can cause condensing.
5. When longer runs are used, support with appropriate hangers.
6. To prevent blockage, do not vent into bottom of chimney.
7. Vent pipe must not go beyond inside wall of chimney.
8. Vent passing through floors or ceilings must be fire-stopped.

TABLE 2

BOILER NO.	"D"—MINIMUM BREECHING SIZE
HE II-3	4" DIA.
HE II-4	5" DIA.
HE II-5	5" DIA.
HE II-6	5" DIA.



**CHIMNEY DRAFT VENTING
 INSIDE CHIMNEY
 FIGURE 12**

- B. OUTSIDE CHIMNEY** (Masonry, decorative, etc. with one or more walls exposed to outside)
1. Can be used for chimney draft venting only when lined with corrosion-resistant metal liner. Provide condensate drain. Size liner per ANSI Z223.1. Increase breeching at boiler per Table 2.
 2. Can be used as raceway for direct exhaust. See pages 10 and 11.

DIRECT EXHAUST

CAUTION

When removing appliance from common venting system, vent system may be too large for remaining appliance. Follow instructions, page 9.

WARNING

Give special attention to location of vent to avoid possibility of severe personal injury, death, or substantial property damage.

1. Gases will form white plume in winter.
2. Plume could obstruct window view.
3. Prevailing winds could cause freezing of condensate and water/ice build-up on building, plants or roof.
4. Winds in excess of 45 mph can cause nuisance boiler shut-down if boiler is sidewall vented.
5. Locate or guard vent to prevent accidental contact by people or pets.
6. Vent must terminate at least 4 feet below or 4 feet horizontally from any door, window or gravity air inlet to building. Vent must not be less than 7 feet above grade when located adjacent to public walkways.
7. Do not terminate vent above any door, window or gravity air inlet. Condensate can freeze causing ice formations.
8. Terminate at least 6 feet from adjacent walls.
9. Do not terminate into a window well, stairwell, alcove, courtyard or other recessed area.
10. Terminate vent at least 1 foot above grade, including normal snowline.

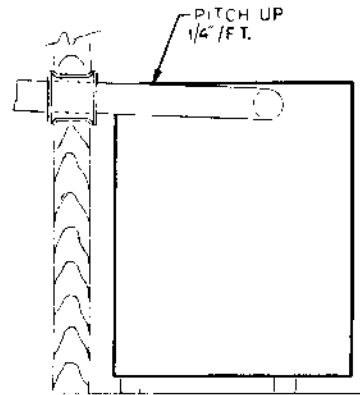
VENTING PROCEDURE

1. Determine entire vent length and number of elbows required. Actual venting system must not exceed limitations in charts below.

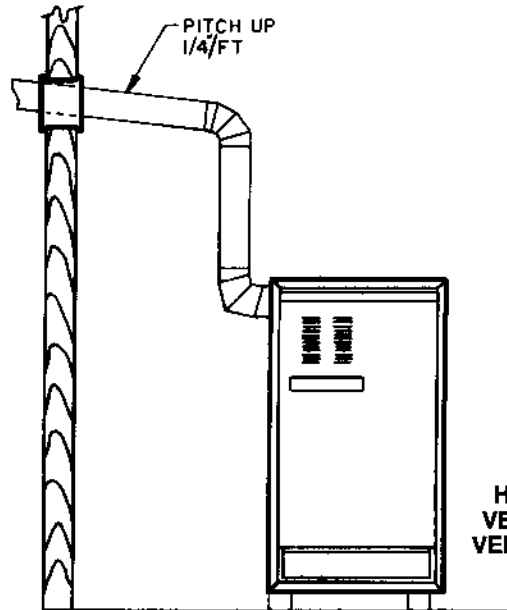
VENTING SYSTEM LENGTH vs NUMBER OF ELBOWS FOR 3" RIGID VENT					
Maximum Length—Feet	48	41	34	27	20
Maximum Number of Elbows	2	3	4	5	6

VENTING SYSTEM LENGTH vs NUMBER OF ELBOWS FOR 3" 304 STAINLESS STEEL FLEXIBLE VENT					
Maximum Length—Feet	48	38	31	24	17
Maximum Number of Elbows	0	1	2	3	4

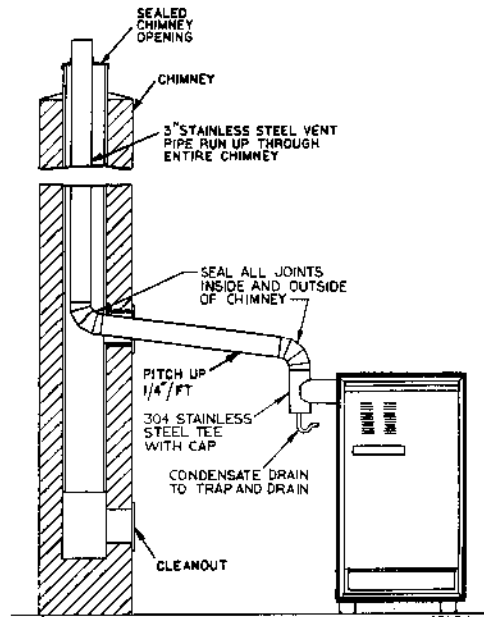
2. Use 3-inch diameter vent pipe pitched up from boiler. Do not connect other appliances to this vent. See Figures 13 and 14 for thru-the-wall or Figure 15 for thru chimney. Vent pipe material:
 - a. Runs thru heated space (at least room temperature, i.e., inside chimney, etc.)—3" galvanized vent pipe.
 - b. Runs thru cold areas (below room temperature, i.e., chimney with one or more walls exposed to outside, etc.)—3" 304 or 316 stainless steel vent pipe and "Venting Thru Cold Areas" instructions, page 11.



**HORIZONTAL VENTING
FIGURE 13**

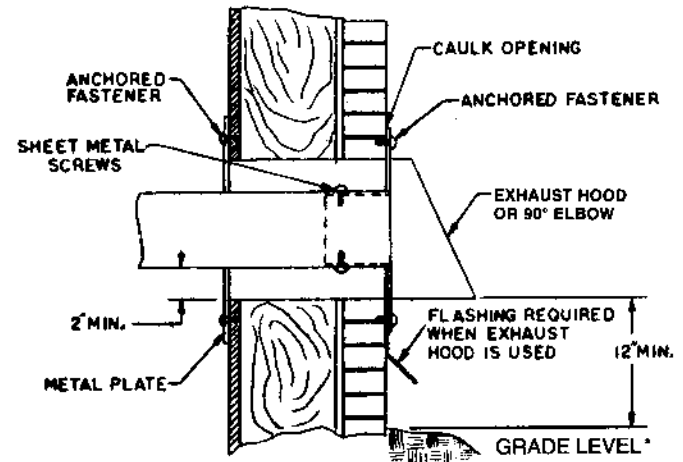


**HORIZONTAL VENTING WITH VERTICAL RISER
FIGURE 14**

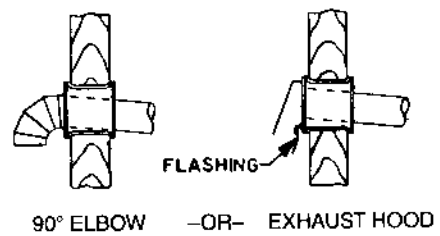


**VENTING THROUGH CHIMNEY
FIGURE 15**

3. Seal all joints with approved silicone sealant (400°F-Dow 732 RTV or equivalent).
4. **MAINTAIN TWO-INCH CLEARANCE** from combustible materials to vent pipe.
5. Long horizontal vent runs should be supported with appropriate hangers.
6. Vent termination (Figure 16):
 - a. Masonry walls—make a 3½ to 4-inch diameter hole. Follow Figure 17.
 - b. Combustible material—requires 7-inch hole. Make sheet metal plate with 3-inch hole to cover opening. Follow Figure 18.
7. Acceptable method for direct exhaust:
 - a. Remove basement windowpane, if not in window well, and replace with sheet metal plate with 3-inch hole.



**HORIZONTAL VENTING—COMBUSTIBLE WALL
FIGURE 18**

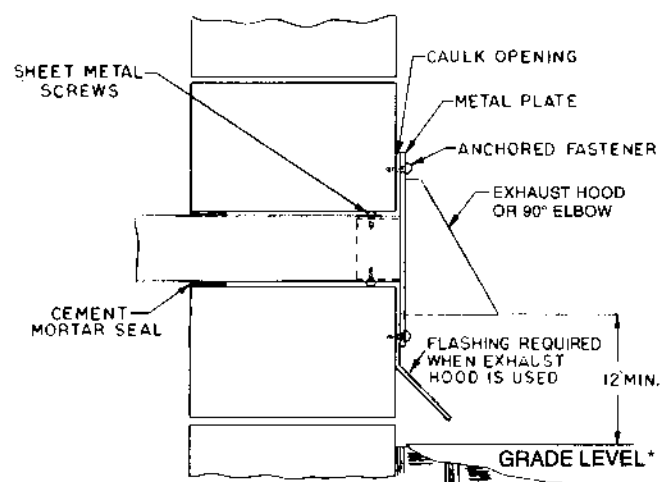


**DIRECT EXHAUST VENT TERMINATION
FIGURE 16**

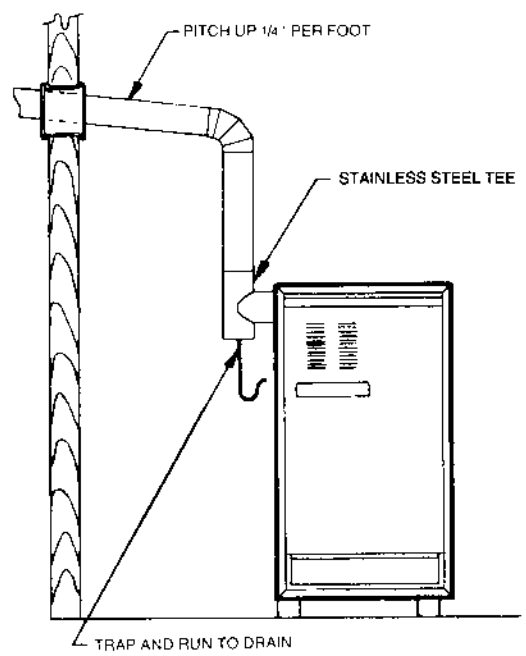
VENTING THROUGH COLD AREAS

Extended runs through cold areas could cause condensation which must be drained away. 3" 304 or 316 stainless steel must be used as shown. Follow "Direct Exhaust" instructions, pages 10 and 11. Refer to Figure 15 or 19.

1. Crimped ends of flue pipe must point towards boiler.
2. Do not install seams of vent pipe on bottom of runs.
3. Tee and trap kit can be ordered from Weil-McLain, part no. 382-930-210.
4. Attach 304 stainless steel tee by drilling 5/32" hole through 1/4" hole in tee and attach with screw provided.
5. Attach drain trap to stainless steel tee with silicone sealant. Refer to Figure 19. Connect 1/2" nominal 5/8" O.D. tubing to trap and route to floor drain. Do not place drain where freezing could occur.



*See #10, page 10, under "Direct Exhaust"
**HORIZONTAL VENTING—NON-COMBUSTIBLE WALL
FIGURE 17**



**VENTING THROUGH COLD AREAS
FIGURE 19**

Section V: Gas Piping

Size gas piping considering:

- a. Diameter and length of gas supply piping.
 - b. Number of fittings.
 - c. Maximum gas consumption (including any possible future expansion).
 - d. Allowable loss in gas pressure from gas meter outlet to boiler. This is specified as three-tenths of an inch water column. For additional pressure drops, see ANSI Z223.1.
1. For natural gas:
 - a) Refer to following tables. To obtain cubic feet per hour, divide the input by 1000.
 - b) Size for rated boiler input.
 - c) Inlet gas pressure: 5" W.C. minimum
13" W.C. maximum
 - d) Manifold gas pressure: 3½" W.C.
 - e) Install 100% lock-up gas pressure regulator in supply line if inlet pressure exceeds 13" W.C. Adjust for 13" W.C. maximum.

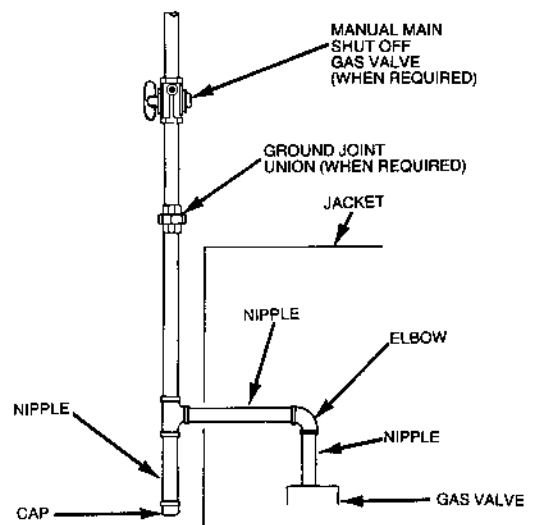
- a) Inlet gas pressure: 11" W.C. minimum
13" W.C. maximum
 - b) Manifold gas pressure: 10" W.C.
 - c) Gas pressure regulator provided by gas supplier must be adjusted for maximum pressure of 13" W.C.
 - d) Contact gas supplier to size pipes, tanks and regulator.
3. Remove jacket door and refer to Figure 20 for gas piping.

PIPE DELIVERY SCHEDULE

Length of Pipe in Feet	*CAPACITY OF PIPE IN CUBIC FEET OF GAS PER HOUR				
	½"	¾"	1"	1¼"	1½"
10	132	278	520	1050	1600
20	92	190	350	730	1100
30	73	152	285	590	890
40	63	130	245	500	760
50	56	115	215	440	670
75	45	93	175	360	545
100	38	79	150	305	460
150	31	64	120	250	380

* Flow determined by Dr. Pole's Formula—0.60 Specific Gravity, 0.30 inches water column pressure drop.

NOTE: For additional piping schedules, see ANSI Z223.1.



**GAS SUPPLY PIPING
FIGURE 20**

ADDITIONAL LENGTH OF PIPE TO BE ADDED FOR EACH ELBOW OR TEE BEND IN THE LINE

Pipe Size, Inches	Additional Length, Feet
½	1.3
¾	1.7
1	2.2
1¼	2.9
1½	3.3

4. Follow good piping practices.
5. Pipe joint compound (pipe dope) must be resistant to corrosive action of liquified petroleum gases and applied sparingly only to male threads of pipe joints.
6. Install drip leg at inlet of gas connection to boiler. Where local utility requires drip leg be extended to the floor, use an appropriate length of pipe between the cap and tee.
7. Install ground joint union to provide for servicing, when required.
8. Install manual shut-off valve in gas supply piping outside boiler jacket when required by local codes or utility requirements.
9. In Canada only, the manual main shut-off valve (when used) must be identified by installer.

10. Support piping by hangers, not by the boiler or its accessories.
11. Purge all air from supply piping.
12. Check factory installed piping and field installed piping for leaks—BUBBLE TEST.

WARNING

DO NOT check for gas leaks with an open flame—BUBBLE TEST. Failure to use bubble test can cause severe personal injury, death or substantial property damage.

- a) Close manual main shut-off valve during any pressure testing at less than 13 inches water column.
- b) Disconnect boiler and gas valve from gas supply piping during any pressure test greater than 13 inches water column.

Section VI: Wiring

Refer to wiring diagram label on jacket door and Control Supplement for specific wiring details.

WIRING

WARNING

For your safety, turn off electrical power supply at service entrance panel before making any electrical connections to avoid possible electrical shock hazard.

All wiring must be installed in accordance with requirements of the National Electrical Code and any additional national, state, or local code requirements having jurisdiction. All safety circuit wiring must be N.E.C. Class 1.

The boiler must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA No. 70-latest edition. If original rollout thermal fuse element wire as supplied with boiler must be replaced, type 200°C wire or equivalent must be used. If other original wiring as supplied with boiler must be replaced, type 90°C wire or equivalent must be used.

The boiler is shipped with the control components completely wired.

Before making wiring connection between zone valve end switches and boiler, issue a call for heat and check for voltage on each set of wires from each end switch. If 24 VAC is present, end switch wiring on zone valve is incorrect and **MUST** be corrected before wiring to boiler.

A separate electrical circuit should be used for the boiler with a fused disconnect switch (15 amp. recommended). Bring electrical supply into junction box on jacket left end panel. Wire electrical supply to leads in junction box as shown on the diagram, Figure 21.

Maximum circulator amp draw for contact rating on control module:

- Full load = 2.7 amps
- Locked rotor = 24.0 amps

CAUTION

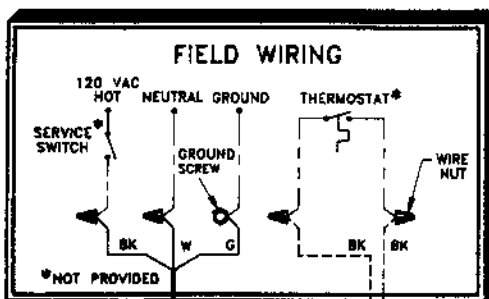
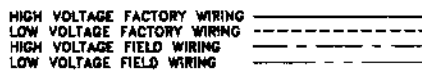
Failure to use circulator with ratings equal to or less than those shown can damage control module. Damage can result in minor property damage.

INSTALL ROOM THERMOSTAT

Install room thermostat on an inside wall. Never install where it will be influenced by drafts, hot or cold water pipes, lighting fixtures, television, sun rays or near a fireplace.

Heat anticipator in thermostat must be set to match power requirements of primary control to which it is connected.

Refer to wiring diagram on jacket door or in Control Supplement for recommended heat anticipator setting with standard equipment. Wire thermostat as shown. See Figure 21.



**FIELD WIRING DIAGRAM
FIGURE 21**

Section VII: Final Adjustments

WATER TREATMENT

WARNING

Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to the boiler will occur.

Continual make-up water will reduce boiler life. Minerals can build up in the sections, reducing heat transfer, overheating the cast iron, and causing section failure.

For unusually hard water areas or low pH conditions (less than 7.0) consult local water treatment company.

Freeze protection (when used):

Use antifreeze especially made for hydronic systems. Inhibited propylene glycol is recommended. **DO NOT** use undiluted or automotive type antifreeze.

50% solution provides protection to about -34°F.

Local codes may require a back-flow preventer or actual disconnect from city water supply.

Determine quantity according to system water content. Boiler water content is listed on back page. Remember to add in the expansion tank water content.

Follow antifreeze manufacturer's instructions.

FILL THE SYSTEM

1. Close manual air vents, drain cock, and automatic air vent, if used.
2. Fill to correct system pressure. Correct pressure will vary with each application. Residential systems are often designed for 12 pounds of cold fill pressure.
3. Open automatic air vent two turns, if used.
4. Open manual water feed valve.
5. a) Starting on the lowest floor, open air vents one at a time until water squirts out. Close vent.
b) Repeat with remaining vents.
6. Close manual water feed valve when correct boiler pressure is reached.

INSPECT BASE INSULATION

Check to make sure refractory is secure against all four sides of the base.

WARNING

If refractory material is damaged or displaced, call serviceman immediately. **DO NOT** operate boiler.

CAUTION

Ceramic fiber material used in boiler base insulation and gaskets can cause temporary skin, eye, and upper respiratory irritation.

Use NIOSH or MSHA approved protection when installing or removing this material.

TO PLACE IN OPERATION

1. Verify boiler is filled with water.
2. Follow operating instructions on pages 15-17 per specific type of gas valve on your boiler.
3. If boiler fails to start, check for the following conditions:
 - a) Loose connections or blown fuse?
 - b) High limit set below boiler water temperature?
 - c) Thermostat set below room temperature?
 - d) Gas not turned on at meter and boiler?
 - e) Incoming natural gas pressure less than 5" W.C., or propane less than 11" W.C.?
 - f) Access panel not secured in place?
 - g) If above fails to eliminate problem, refer to Control Supplement.
4. Check system piping for leaks. If found, repair immediately.

WARNING

Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to the boiler will occur.

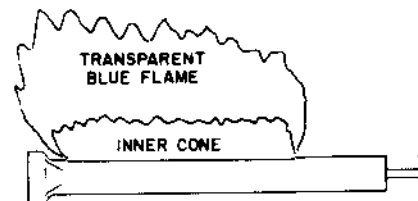
5. Vent air from the system. Refer to steps 4 thru 6 under "Fill the System." Air in the system can interfere with water circulation and cause improper heat distribution.

INSPECT VENTING SYSTEM

Check the gas-tight seal at all vent pipe connections.

CHECK BURNER FLAMES

1. Proper burner flame, see Figure 22. Yellow-orange streaks may appear—caused by dust.
2. Improper flame:
 - a. Overfired—Flames large.
 - b. Underfired—Flames small.
 - c. Lack of primary air—Yellow tipping on flames; sooting will occur.



**TYPICAL
MAIN BURNER
FLAME
FIGURE 22**

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

- If you cannot reach your gas supplier, call the fire department.

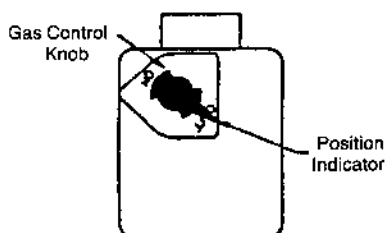
- C. Use only your hand to push in or turn the gas control knob or move the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

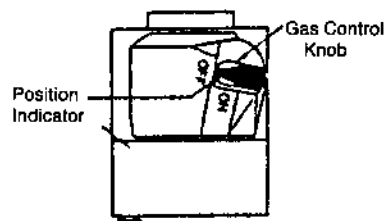
1. STOP! Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

NOTE: Use the picture that corresponds with your valve.

WHITE-RODGERS WR36C



HONEYWELL VR8450



5. Push in gas control knob slightly and turn clockwise \odot to "OFF".
NOTE: Knob cannot be turned to "OFF" unless knob is pushed in slightly. Do not force.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob counterclockwise \ominus to "ON."

5. Turn valve knob clockwise \odot from "ON" position to "OFF." Make sure knob rests against stop.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn valve knob counterclockwise \ominus from "OFF" until it stops. Depress knob and continue rotating counterclockwise to "ON" position. Make sure knob rests against stop. NOTE: Knob cannot be turned to "ON" unless knob is pushed in slightly. Do not force.

8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. To turn boiler "OFF" follow 5 in "Operating Instructions" above that corresponds with your valve.
4. Replace control access panel.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

- If you cannot reach your gas supplier, call the fire department.

- C. Use only your hand to push in or turn the gas control knob or move the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

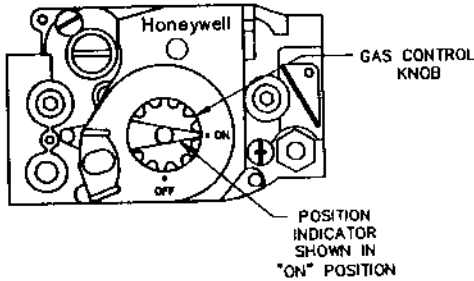
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

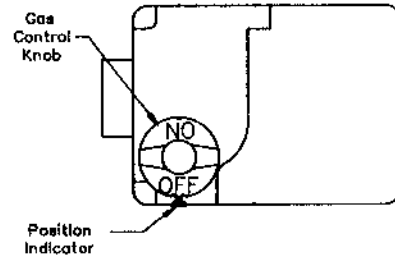
1. **STOP!** Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

NOTE: Use the picture that corresponds with your valve.

HONEYWELL VR8205



WHITE-RODGERS 36E



5. Turn gas control knob clockwise to "OFF."
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob counterclockwise to "ON."

5. Turn gas control knob to "OFF."
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn gas control knob to "ON."

8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. To turn boiler "OFF" follow 5 in "Operating Instructions" above that corresponds with your valve.
4. Replace control access panel.

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. **BEFORE OPERATING**, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

- If you cannot reach your gas supplier, call the fire department.

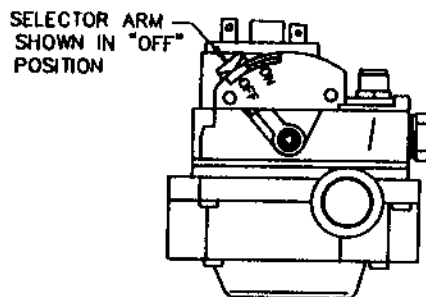
- C. Use only your hand to depress or move the selector arm. Never use tools. If the selector arm will not depress or move by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

ROBERTSHAW 7200DER



5. Depress and move selector arm left ← to "OFF"
NOTE: Selector arm cannot be moved from "ON" to "OFF" unless selector arm is pushed in slightly. Do not force.
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information above. If you don't smell gas, go to next step.
7. Turn selector arm right → to "ON."

8. Turn on all electric power to the appliance.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.
11. Replace control access panel.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Depress and move selector arm left ← to "OFF." Do not force.
4. Replace control access panel.

Section VIII: Check-out Procedure

CHECK-OUT PROCEDURE

Check-off steps as completed.

- 1. Boiler and heat distribution units filled with water?
- 2. Automatic air vent, if used, open two full turns during venting procedure?
- 3. Air purged from system?
- 4. Air purged from gas piping? Piping checked for leaks?
- 5. Follow operating instruction label on boiler for proper start-up. Also refer to "To Place in Operation", page 14.
- 6. Proper burner flame? Refer to "Check Burner Flames", page 14.
- 7. Test safety controls: If boiler is equipped with a low water cut-off or additional safety controls, test for operation as outlined by the manufacturer. Burners should be operating and should go off when controls are tested. When safety devices are restored, burners should reignite.
- 8. Test limit control: While burners are operating, move the indicator of the high limit control below actual boiler water temperature. The burners should go off while the circulator continues to operate. Raise the limit control above the boiler water temperature and the burners should reignite.
- 9. Test ignition system safety device:
 - a. Connect voltmeter to gas valve terminals.
 - b. Turn off manual gas valve.
 - c. Set thermostat to call for heat.
 - d. Ignitor will glow for approx. 20 seconds. Near end of 20 seconds, 24 VAC will show at gas valve for approximately 6 seconds and then return to 0 VAC.
 - e. To restart system, follow "To Place in Operation," page 14.
- 10. High limit control set to the design temperature requirements of the system? Maximum high limit setting--220°F.
- 11. For multiple zones, flow adjusted so it is about the same in each zone?
- 12. Thermostat heat anticipator is set properly? Refer to wiring diagram on jacket door.
- 13. Boiler cycled with the thermostat? Raise to highest setting and verify boiler goes through normal start-up cycle. Lower to lowest setting and verify boiler goes off.
- 14. Measure gas input (natural gas only):
 - a. Operate boiler 10 minutes.
 - b. Turn off other appliances.
 - c. At natural gas meter, measure time (in seconds) required to use one cubic foot of gas.
 - d. Calculate gas input:

$$\frac{3600 \times 1000}{\text{number seconds from step C}} = \text{Btuh}$$
 - e. Btuh calculated should approximate input rating on rating plate.
- 15. Manifold gas pressure for natural gas should be 3½ inches water column and for propane gas should be 10 inches water column. Check manifold gas pressure by connecting a manometer to the downstream test tapping on the main gas valve.
- 16. Several operating cycles observed for proper operation?
- 17. Room thermostat set to desired room temperature?
- 18. Installation and Service Certificate on this page completed?
- 19. All instructions shipped with this boiler reviewed with owner or maintenance person, returned to envelope and given to owner or displayed near boiler?

Installation and Service Certificate

BOILER MODEL _____ SERIES _____ CP NUMBER _____ DATE INSTALLED _____

BTU INPUT _____

- Installation instructions have been followed.
- Check-out sequence has been performed.
- Above information is certified to be correct.
- Information received and left with owner/maintenance person.

Installer _____ (Company) _____ (Address) _____ (Phone) _____ (Installer's Signature)

Section IX: Maintenance

**Also Refer to Control Supplement Shipped With
Boiler For Specific Control Operation and Troubleshooting**

SUGGESTED MINIMUM MAINTENANCE SCHEDULE

Beginning of each heating season:

1. Annual service call by a qualified service agency.
2. Check burners and flueways for sooting. Use a mirror and flashlight to look up from base through sections. Call serviceman to clean, if necessary.
3. Visually inspect venting system for blockage, deterioration or signs of leakage.
4. Visually inspect base insulation.
5. Check that boiler area is free from combustible materials, gasoline and other flammable vapors and liquids.
6. Check for and remove any obstruction to the flow of combustion or ventilation air to the boiler.
7. Follow procedure "To Place in Operation," page 14.
8. Check vent system per page 14.
9. Visually inspect burner flames. See page 14.
10. Check operation of safety devices. Refer to manufacturer's instructions.
11. Follow instructions on circulator to oil, if oil lubricated. Overoiling will damage the circulator. Water lubricated circulators do not need oiling.
12. Visually inspect condensate drain trap and hose for proper operation or deterioration.
13. Oil blower motor with S.A.E. 20 motor oil as shown on motor. Do not use universal household oils.

Daily during heating season:

1. Check that boiler area is free from combustible materials, gasoline and other flammable vapors and liquids.
2. Check for and remove any obstruction to the flow of combustion or ventilation air to the boiler.

Periodically during heating season:

1. Check safety relief valve. Reference manufacturer's instructions on relief valve tag.
2. Test low water cut-off, if used. Reference manufacturer's instructions.
3. Visually inspect condensate drain trap and hose for proper operation or deterioration.

Monthly during heating season:

1. Check for leaks in the boiler and piping. If found, repair at once. DO NOT use petroleum based stop-leak compounds—leakage between the sections will occur.
2. Visually inspect burner flames. See page 14.
3. Visually inspect venting system for proper function, deterioration or leakage.
4. Check automatic air vent for leakage.

Every six months:

Oil blower motor with S.A.E. 20 motor oil as shown on motor. Do not use universal household oils.

End of each heating season (annual shutdown procedure):

1. Follow "To Turn Off Gas to Appliance," pages 15–17 for your specific gas valve.
2. DO NOT drain system unless exposure to freezing temperatures will occur. If antifreeze is used in the system, do not drain.

CLEANING BOILER HEATING SURFACES

After each heating season, remove front access panel to inspect burners and flues. Use a mirror and flashlight to look up from base through sections. If soot is found, contact your serviceman to clean. The following cleaning procedure should only be done by a certified HE II heating contractor. Properly adjusted gas boilers seldom need flue cleaning.

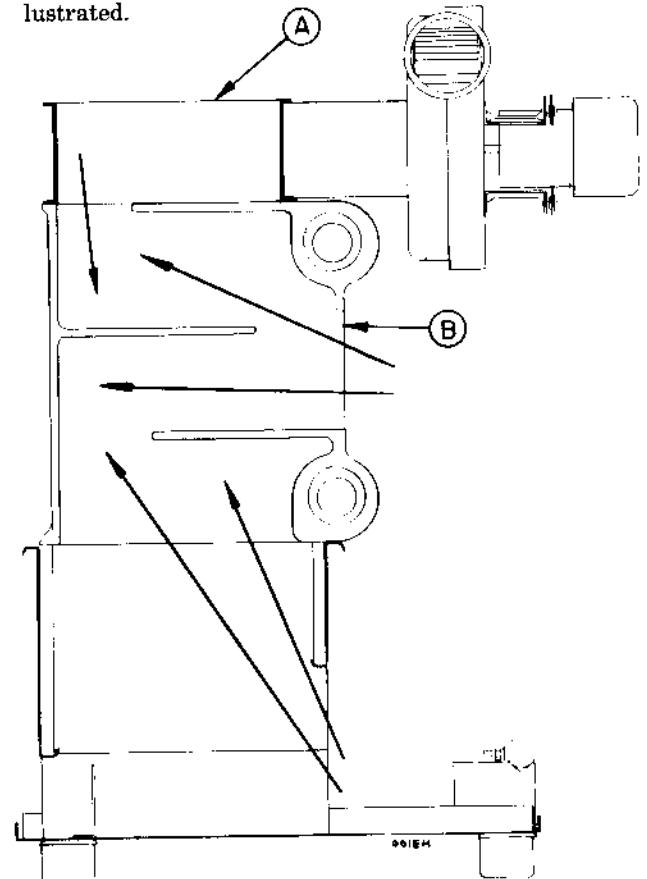
1. Shut down boiler.
2. Remove top jacket panels. Remove front and interior jacket panels.
3. Remove flue collector cover (A) and front cleanout cover (B).

CAUTION

Ceramic fiber material used in boiler base insulation and gaskets can cause temporary skin, eye, and upper respiratory irritation.

Use NIOSH or MSHA approved protection when installing or removing this material.

4. Remove burners. Vacuum or brush to remove dust and lint.
5. Thoroughly clean heating surfaces with a flue brush as illustrated.



**CLEANING BOILER HEATING SURFACES
FIGURE 23**

6. Remove soot from boiler.
7. Replace burners.

DANGER

When replacing, burner tubes must be seated in the slots in the back with the openings facing up.

8. Replace flue collector cover and front cleanout cover. Re-seal with silicone sealant.
9. Replace jacket panels.
10. Start boiler following start-up procedure.

Section X: Replacement Parts

Parts Lists

Component-Assemblies Replacement

(Refer to Control Supplement for control replacement)

Section Assembly	19
Base Assembly	20
Jacket Assembly	21
Flue Collector Assembly, Transition Assembly and Blower Cabinet Assembly	22
Boiler Trim Assembly	23

COMPONENT REPLACEMENT INSTRUCTIONS

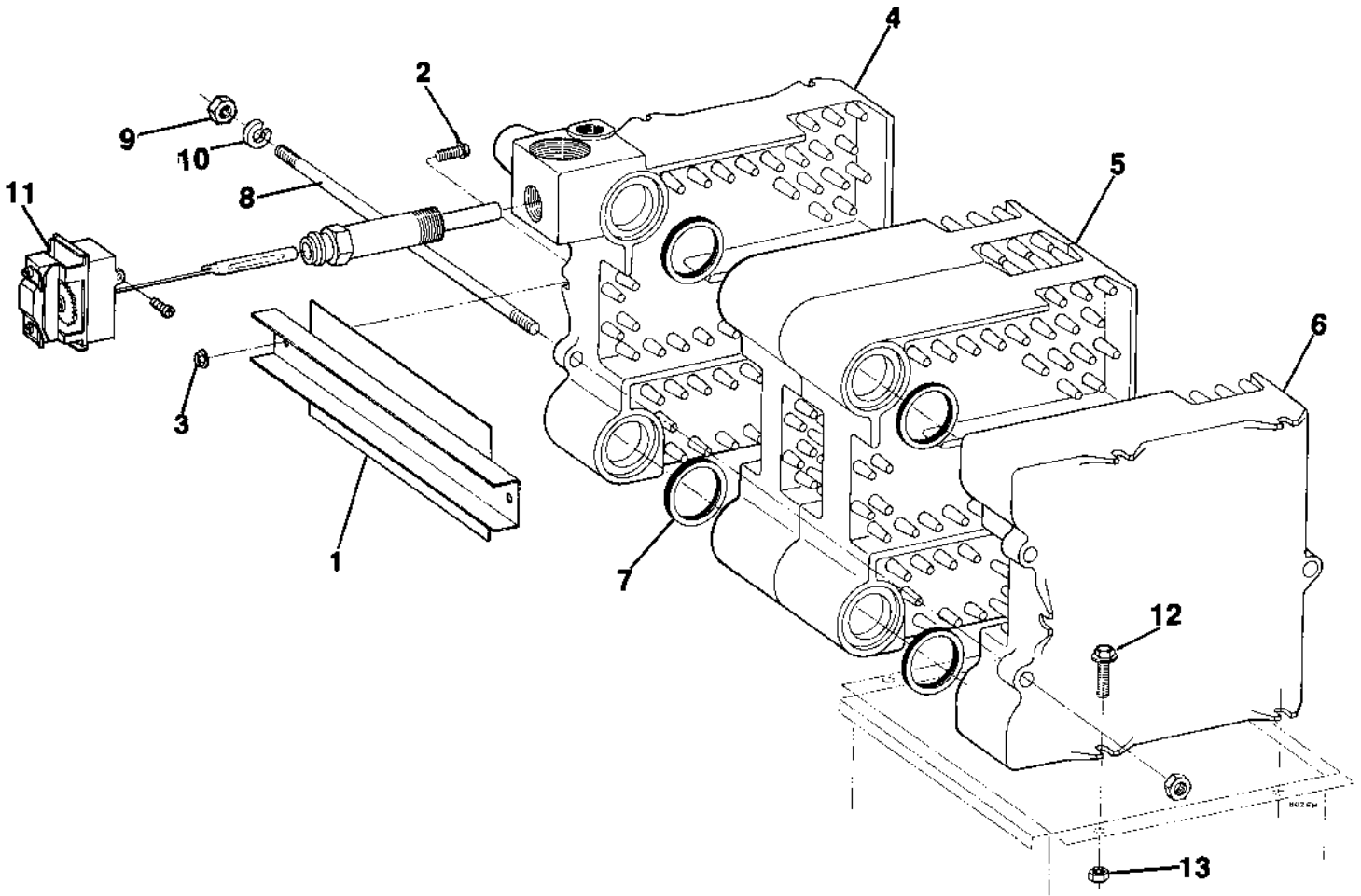
Before replacing any parts on the boiler:

1. Turn off power
2. Shut off gas supply

Refer to the appropriate exploded diagram for parts replacement.

Replacement parts can be ordered or purchased through a local Weil-McLain distributor. When ordering, specify "Model HE II" boiler and include description and number of replacement part. Some parts are stock items and can be purchased from a local supply house.

Section Assembly HE II

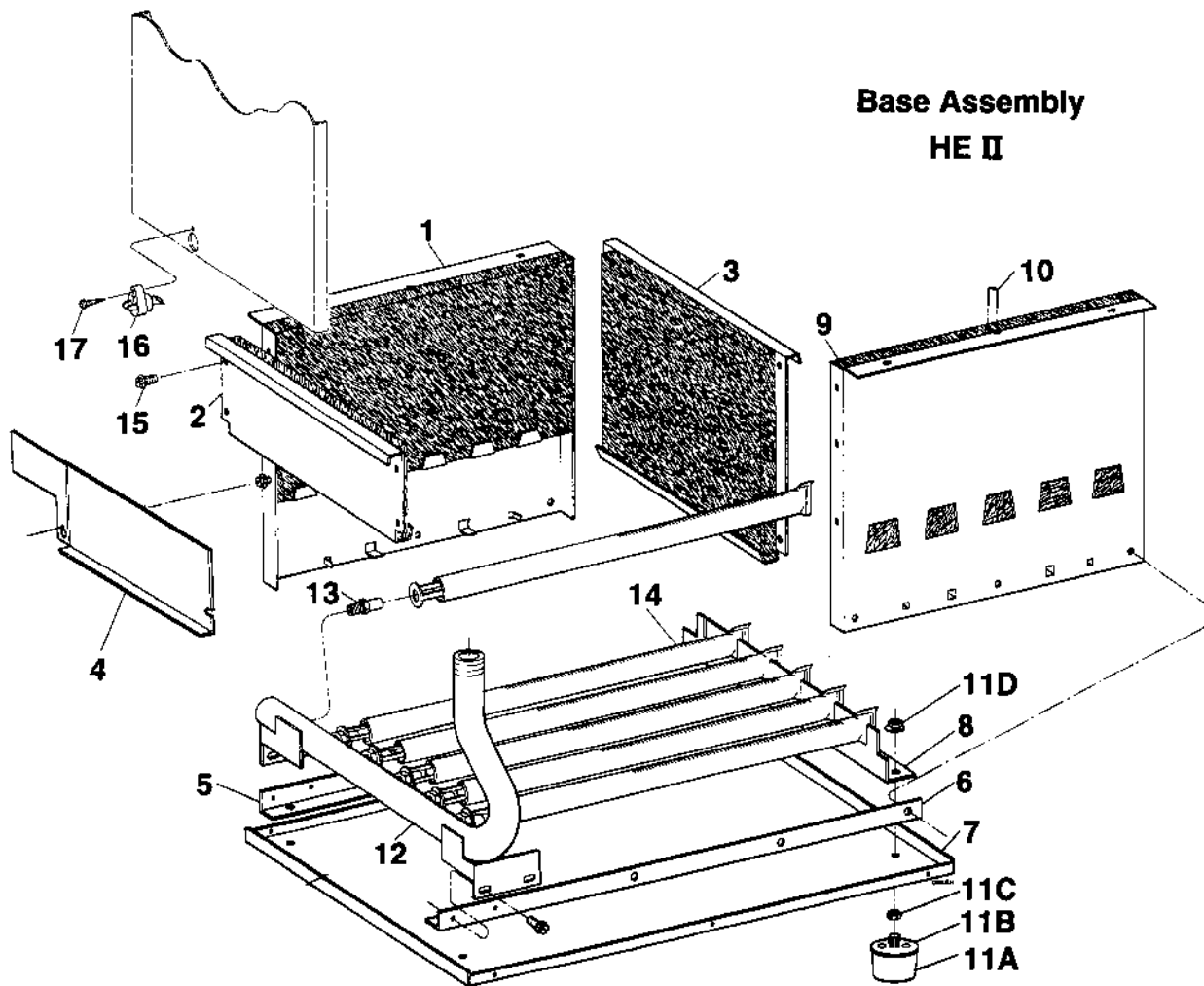


NO.	PART DESCRIPTION	HE II 3		HE II 4		HE II 5		HE II 6	
		QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.
1	Cleanout Plate	1	10B657	1	10B658	1	10B659	1	10B660
2	Screw, Whiz Lock 1/4"-20 x 1 1/4"	2	■	2	■	2	■	2	■
3	Nut, Whiz Lock 1/4"-20	2	■	2	■	2	■	2	■
4	Left End Section 2914	1	10B043	1	10B043	1	10B043	1	10B043
5	Intermediate Section 2915	1	10B044	2	10B044	3	10B044	4	10B044
6	Right End Section 2918	1	10B045	1	10B045	1	10B045	1	10B045
7	Square Cut Seal 2"	4	11B165	6	11B165	8	11B165	10	11B165
8	Tie Rod	3	10B921	3	10B922	3	10B923	3	10B924
9	Nut, Hex 7/16"-14	6	■	6	■	6	■	6	■
10	Washer, Helical Spring Lock 7/16"	3	■	3	■	3	■	3	■
11	High Limit Kit (includes high limit, well, case and cover, 1/4" quick connects)	1	10C453	1	10C453	1	10C453	1	10C453
12	Screw, Whiz Lock 5/16"-18 x 1"	4	■	4	■	4	■	4	■
13	Nut, Two Way Lock 5/16"-18	4	■	4	■	4	■	4	■
14	Retort Cement (not shown)	1	■	1	■	1	■	1	■

■ Standard hardware item, purchase locally.

Part nos. shown are Weill-McLain Sales Reference Numbers taken from Weill-McLain Boilers and Controls Repair Parts Book.

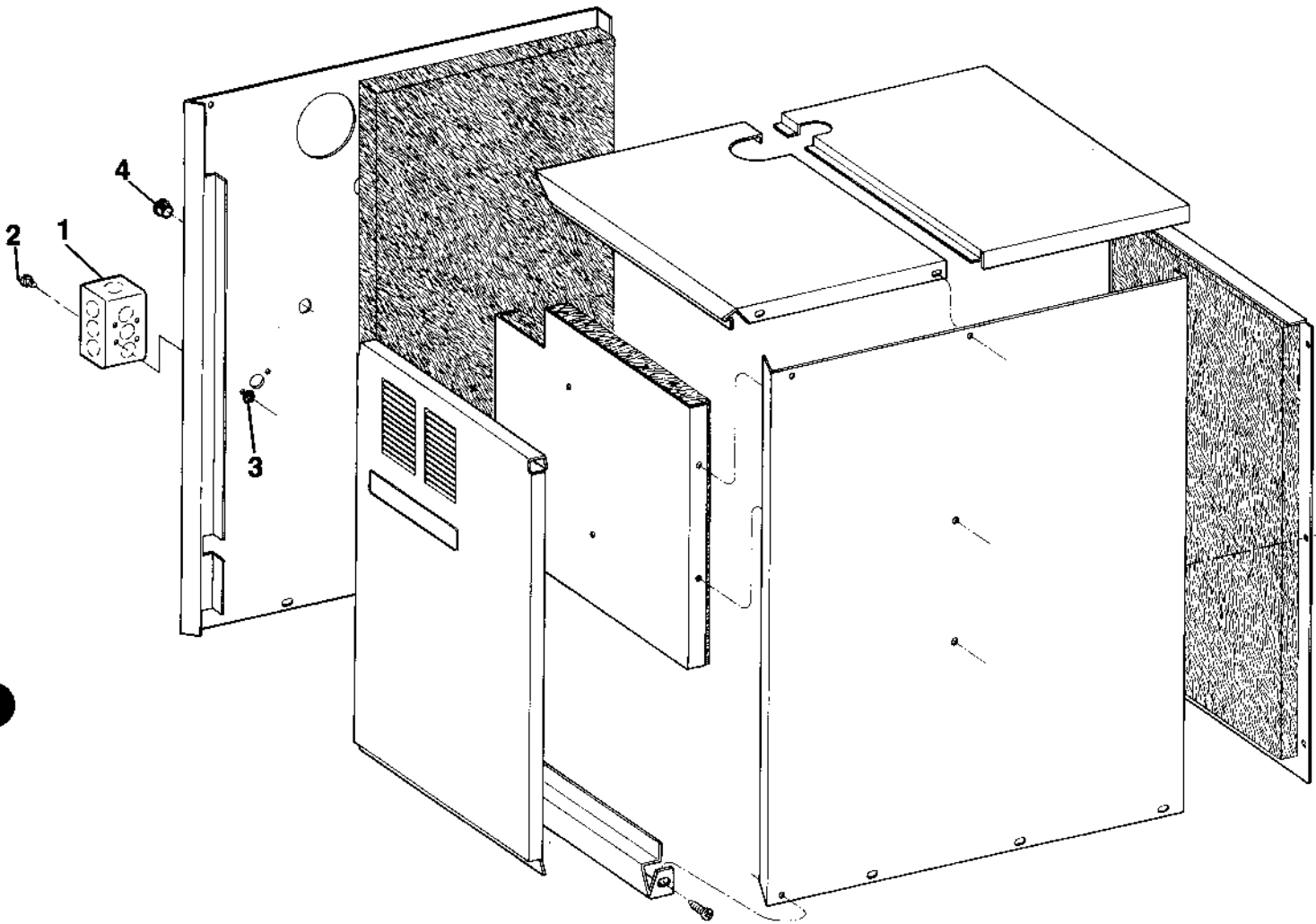
Base Assembly HE II



MODEL NO.		HE II 3		HE II 4		HE II 5		HE II 6	
NO.	PART DESCRIPTION	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.
1	Base Side Panel	2	10B803	2	10B803	2	10B803	2	10B803
2	Base Front Cross Tie	1	10B665	1	10B666	1	10B667	1	10B668
3	Base Back Cross Tie	1	10B669	1	10B670	1	10B671	1	10B672
4	Base Access Panel	1	10B685	1	10B686	1	10B687	1	10B688
5	Base Pan Angle—Left Hand	1	10B682	1	10B682	1	10B682	1	10B682
6	Base Pan Angle—Right Hand	1	10B681	1	10B681	1	10B681	1	10B681
7	Base Pan	1	10B661	1	10B662	1	10B663	1	10B664
8	Burner Rest	1	10B673	1	10B674	1	10B675	1	10B676
9	Base Insulation Kit (includes insulation and staples)	1	11B119	1	11B120	1	11B121	1	11B122
10	Staple 1 $\frac{3}{4}$ " for base insulation	2	■	2	■	2	■	2	■
11	Leg, Screw-on Assembly	4	10B982	4	10B982	4	10B982	4	10B982
11a	Leg	4	—	4	—	4	—	4	—
11b	Washer, with $\frac{3}{8}$ " hole	4	—	4	—	4	—	4	—
11c	Nut, $\frac{5}{16}$ "-18 Jam	4	—	4	—	4	—	4	—
11d	Nut, $\frac{5}{16}$ "-18 Whiz Lock Plated	4	—	4	—	4	—	4	—
	Screw, Machine Flat Head Phillips $\frac{5}{16}$ "-18 × 2 $\frac{1}{4}$ "	4	—	4	—	4	—	4	—
12	Manifold	1	11B036	1	11B037	1	11B038	1	11B039
13	Orifice, Main Burner								
	Natural—#47 Std. Drill	4	11B168	6	11B168	8	11B168	10	11B168
	Propane—.048"	4	11B169	6	11B169	8	11B169	10	11B169
14	Burner, Steel	4	10B866	6	10B866	8	10B866	10	10B866
15	Screw, STP Type D Hex Wash Head Slot 10-32 × $\frac{3}{16}$ "	20	■	20	■	20	■	20	■
16	Rollout Thermal Fuse Element	1	10C257	1	10C257	1	10C257	1	10C257
17	Screw Phillips, 8 × $\frac{3}{4}$ Pan Hd.-A.	1	■	1	■	1	■	1	■
18	Retort Cement	1	■	1	■	1	■	1	■

■ Standard hardware item, purchase locally.
Part nos. shown are Weil-McLain Sales Reference Numbers taken from Weil-McLain Boilers and Controls Repair Parts Book.

Jacket Assembly HE II

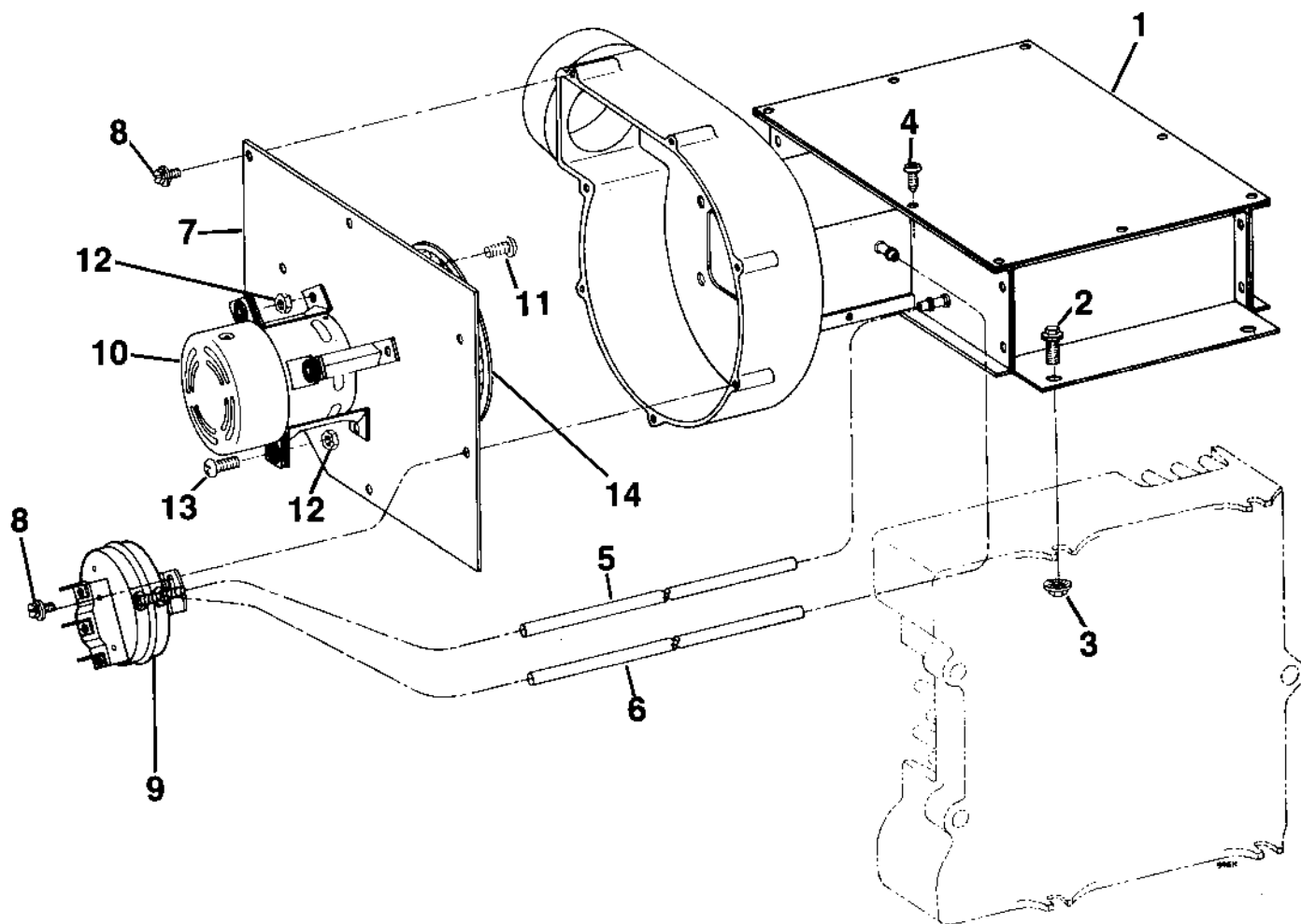


MODEL NO.		HE II 3		HE II 4		HE II 5		HE II 6	
NO.	PART DESCRIPTION	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.
	Jacket Carton (includes control tray—shown in Control Supplement)	1	10J200	1	10J201	1	10J202	1	10J203
1	Junction Box 2" × 4"	1	■	1	■	1	■	1	■
2	Screw, Machine Pan Head Phillips 10-32 × 1/2"	2	■	2	■	2	■	2	■
3	Nut, Hex Green Plated 10-32	2	■	2	■	2	■	2	■
4	Bushing, Thermostat Wire	1	■	1	■	1	■	1	■

■ Standard hardware item, purchase locally.

Part nos. shown are Weil-McLain Sales Reference Numbers taken from Weil-McLain Boilers and Controls Repair Parts Book.

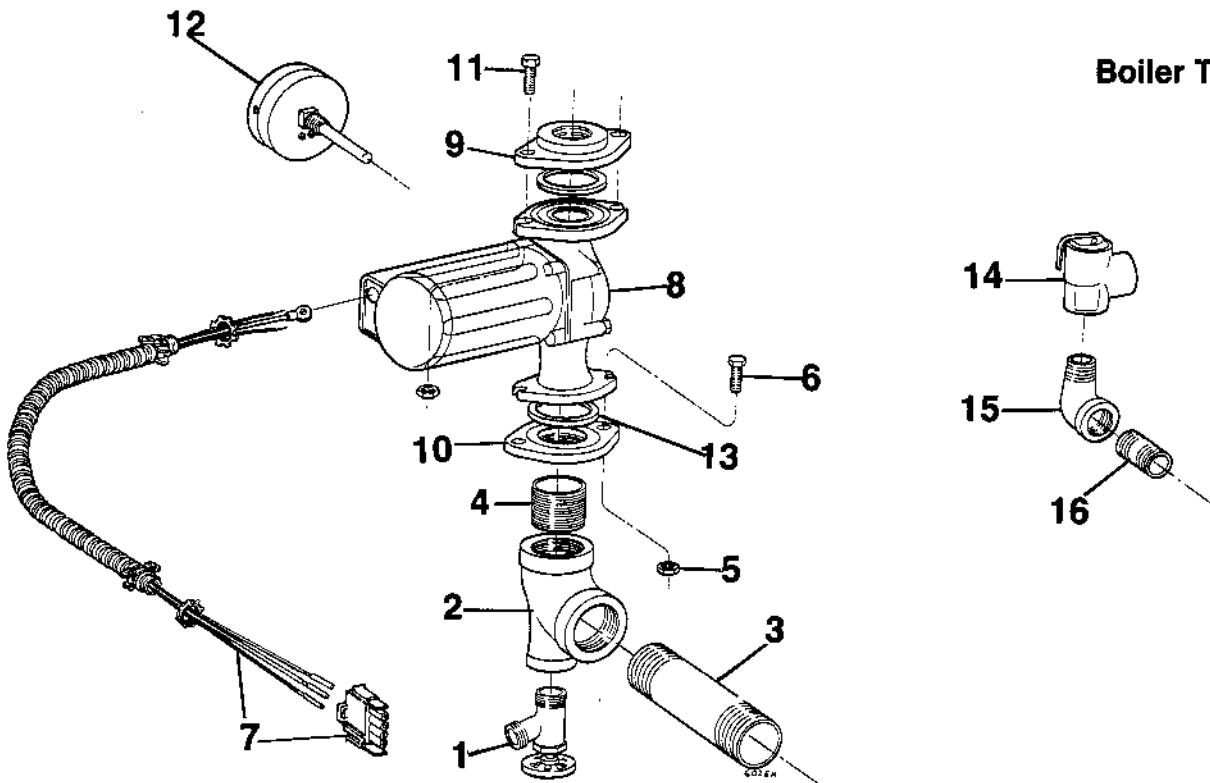
Flue Collector Assembly, Transition Assembly and Blower Cabinet Assembly HE II



NO.	MODEL NO. PART DESCRIPTION	HE II 3		HE II 4		HE II 5		HE II 6	
		QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.
1	Flue Collector Replacement Kit (flue collector, transition and blower housing and silicone sealant)	1	10B649	1	10B650	1	10B651	1	10B652
2	Screw, Whiz Lock 1/4"-20 x 1 1/4" (For Flue Collector Assembly to Sections)	4	■	4	■	4	■	4	■
3	Nut, Whiz Lock 1/4"-20 (For Flue Collector Assembly to Sections)	4	■	4	■	4	■	4	■
4	Screw, Sheet Metal Type A Pan Head Phillips No. 10 x 1/2" (For Flue Collector Top Panel)	6	■	8	■	8	■	10	■
5	Tubing, 1/8" ID x 12", White	1	10C308	1	10C308	1	10C308	1	10C308
6	Tubing, 1/8" ID x 12", Red	1	10C309	1	10C309	1	10C309	1	10C309
7	Blower Assembly Kit (blower wheel, cover plate blower motor, motor mounting brackets, shock mounts, nuts and bolts and silicone sealant)	1	10B852	1	10B852	1	10B852	1	10B852
8	Screw, STP Type D Hex Wide Head SLT, No. 10-32 x 3/8" (For Blower Housing Cover Plate and Pressure Switch)	7	■	7	■	7	■	7	■
9	Pressure Switch*	1	10C213	1	10C213	1	10C213	1	10C214
10	Replacement Motor Kit (motor, shock mounts, silicone sealant)	1	10B433	1	10B433	1	10B433	1	10B433
11	Round Head Phillips Mach. Screw 10-32 x 3/8 ZP	3	■	3	■	3	■	3	■
12	10-32 Hex 2-way Lock Nut	6	■	6	■	6	■	6	■
13	Round Head Phillips Mach. Screw 10-32 x 3/4 ZP	3	■	3	■	3	■	3	■
14	Blower Wheel	1	10C058	1	10C058	1	10C058	1	10C058

■ Standard hardware item, purchase locally.
 * For high altitude pressure switch part number, see high altitude label attached to boiler.
 Part nos. shown are Well-McLain Sales Reference Numbers taken from Well-McLain Boilers and Controls Repair Parts Book.

Boiler Trim Assembly HE II



NO.	MODEL NO. PART DESCRIPTION	HE II 3		HE II 4		HE II 5		HE II 6	
		QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.	QTY.	PART NO.
1	Drain Valve 3/4"	1	■	1	■	1	■	1	■
2	Tee reducer black 1 1/4" x 3/4" x 1 1/4"	1	■	1	■	1	■	1	■
3	Nipple 1 1/4" x 5"	1	■	1	■	1	■	1	■
4	Nipple, Close 1 1/4"	1	■	1	■	1	■	1	■
5	Nut, Hex 7/16"-14	4	■	4	■	4	■	4	■
6	Screw, Hex Head 7/16"-14 x 1 1/2"-SMALL PUMPS	2	■	2	■	2	■	2	■
	Screw, Hex Head 7/16"-14 x 1 1/2"-LARGE PUMPS	2	■	2	■	2	■	2	■
7	Circulator Harness Kit for TACO 007 and B&G LR20 (includes harness, 4 pin connector and wirenuts)	1	10C454	1	10C454	1	10C454	1	10C454
	Circulator Harness Kit for TACO 110 and B&G 100 (includes harness, 4 pin connector and wirenuts)	1	10C455	1	10C455	1	10C455	1	10C455
8	Circulator, SMALL-TACO 007	1	10C195	1	10C195	1	10C195	1	10C195
	Circulator, SMALL-B&G LR20	1	10C194	1	10C194	1	10C194	1	10C194
	Circulator, LARGE-B&G #100	1	10C196	1	10C196	1	10C196	1	10C196
	Circulator, LARGE-TACO #110	1	10C197	1	10C197	1	10C197	1	10C197
9	Pump Flange 1" B&G	1	10C295	1	10C295	1	10C295	1	10C295
	Pump Flange 1" TACO	1	10C296	1	10C296	1	10C296	1	10C296
10	Pump Flange 1 1/4" B&G	1	10C297	1	10C297	1	10C297	1	10C297
	Pump Flange 1 1/4" TACO	1	10C298	1	10C298	1	10C298	1	10C298
11	Screw, Hex Head 7/16"-14 x 1 1/2"-LARGE PUMPS	2	■	2	■	2	■	2	■
	Screw, Hex Head 7/16"-14 x 1 1/2"-SMALL PUMPS	2	■	2	■	2	■	2	■
12	Pressure-Temperature Gauge	1	10C034	1	10C034	1	10C034	1	10C034
13	Gasket, TACO-SMALL & LARGE PUMPS	2	10C307	2	10C307	2	10C307	2	10C307
	Gasket B&G LR20	2	10C305	2	10C305	2	10C305	2	10C305
	Gasket B&G 100	2	10C306	2	10C306	2	10C306	2	10C306
14	Relief Valve Female 30#	1	■	1	■	1	■	1	■
15	Street Ell, 3/4" Black for Female Valve	1	■	1	■	1	■	1	■
16	Nipple, 3/4" x 2" Black	1	■	1	■	1	■	1	■

■ Standard hardware item, purchase locally.

Part nos. shown are Weil-McLain Sales Reference Numbers taken from Weil-McLain Boilers and Controls Repair Parts Book.

RATINGS

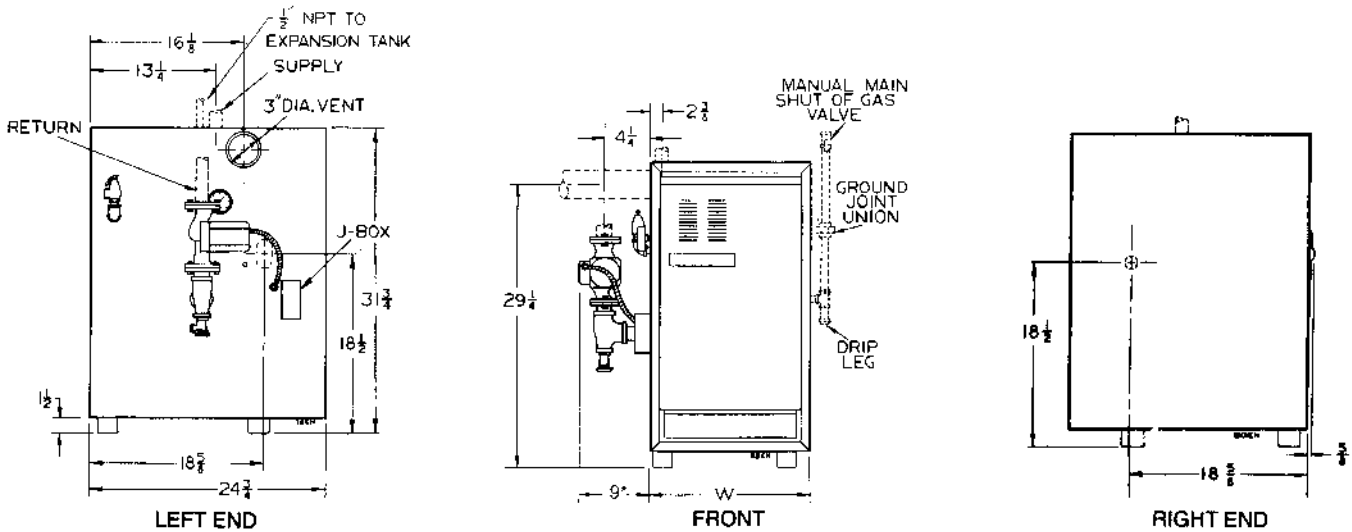


HE II BOILER

Water Boiler Number	A.G.A. Input BTU/Hr.▶	DOE Heating Capacity BTU/Hr.†	Net I-B-R Ratings-Water BTU/Hr.*	% DOE Seasonal Efficiency AFUE	Chimney Size**	Boiler Water Content (Gal.)
HE II-3	67,000	55,000	48,000	82.4	4" I.D. × 20'	1.54
HE II-4	100,000	82,000	71,000	82.3	5" I.D. × 20'	2.11
HE II-5	133,000	109,000	95,000	82.2	5" I.D. × 20'	2.69
HE II-6	167,000	137,000	119,000	82.2	5" I.D. × 20'	3.26

- ▶ For elevations above 2,000 ft. AGA ratings must be reduced. Contact Weil-McLain representative or distributor for details.
 - † Based on standard test procedures prescribed by the United States Department of Energy.
 - * Net I-B-R ratings are based on net installed radiation of sufficient quantity for the requirements of the building and nothing need be added for normal piping and pick-up. Ratings are based on a piping and pick-up allowance of 1.15. An additional allowance should be made for unusual piping and pick-up loads. Consult Weil-McLain representative or distributor.
 - ** In special cases where surrounding conditions permit, chimney height may be reduced to 10 feet. HE II boiler may be vented directly outside using 3" dia. vent pipe.
- Boilers tested for 50 PSI working pressure.
HE II boilers not available for millivolt systems.

DIMENSIONS



*With Fill-Trol tank, add 4 1/4" (HE II-6 only).

Water Boiler Number	Supply	Copper Return	Boiler Width W	Gas Connection Size	Crate Dimensions (outside measurements—in.)			Approx. Shipping Wt.-Lbs.
					Length	Width	Height	
HE II-3	1 1/4" N.P.T.	1" N.P.T.	11 1/4"	1/2"	28	28	35	217
HE II-4	1 1/4" N.P.T.	1" N.P.T.	14 1/4"	1/2"	28	28	35	268
HE II-5	1 1/4" N.P.T.	1" N.P.T.	17 1/4"	1/2"	28	34	35	319
HE II-6	1 1/4" N.P.T.	1" N.P.T.	20 1/4"	1/2"	28	34	35	370

Gas piping from meter to be sized according to local utility requirements.

STANDARD EQUIPMENT

Factory-Fire Test
Insulated Steel Jacket
Flue Gas Collector Assembly with Close-off
Cast Iron Sections with Built-in Air Separator
Blower and Motor Assembly
Aluminized Steel Burners
Combination Gas Control Valve (includes main valve,
redundant valve, pressure regulator, pilot filter
and manual main shutoff valve) for 24 Volt
Microprocessor-based Control Module with Indicator Lights
Hot Surface Ignition System
Pressure Switch
Rollout Thermal Fuse Element
Electrical Junction Box

40 VA Transformer
High-Limit Temperature Control
Circulator—1-Inch, All Sizes
30 PSI ASME Water Relief Valve
Combination Pressure-Temperature Gauge
Drain Valve

ADDITIONAL EQUIPMENT

Fill-Trol System (expansion tank, fill and check valve,
automatic air vent, and fittings – #109 Sizes 3 through 5;
#110 Size 6)



WEIL-McLAIN

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